

# **LIPOPROTEIN PATTERNS AND ATHEROSCLEROSIS**

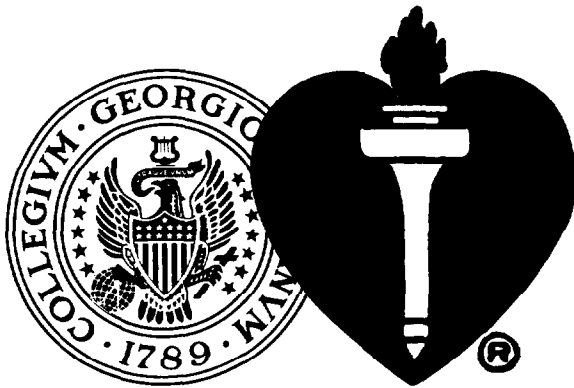
**DONALD S. FREDRICKSON, M.D.**

Chief, Molecular Disease Branch

National Heart Institute

National Institutes of Health

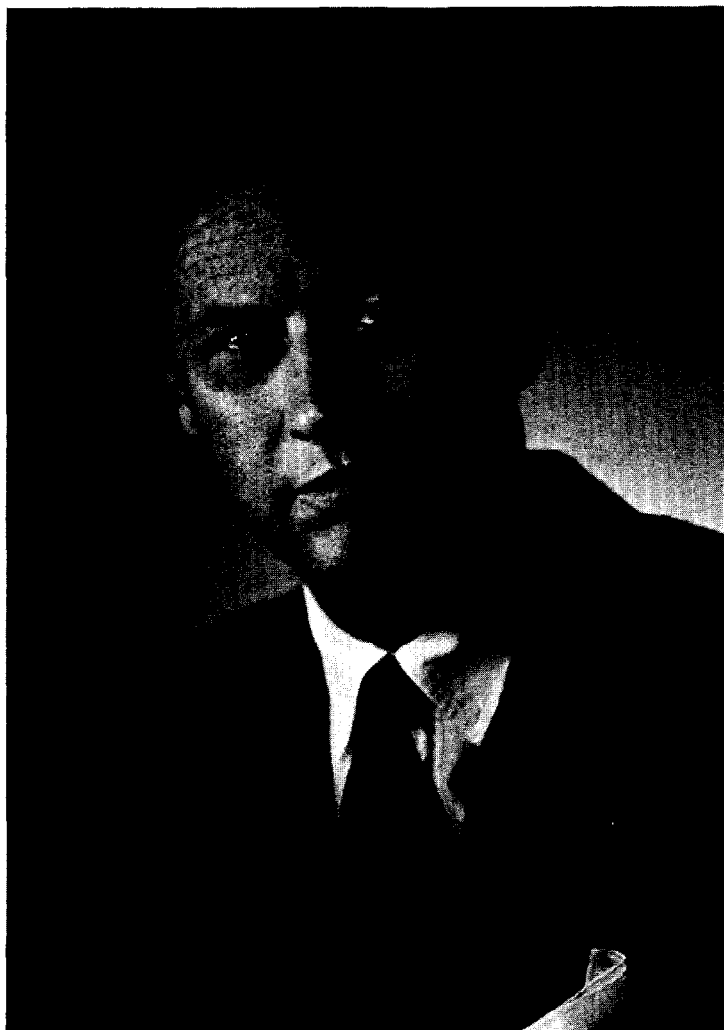
Lecture given at Georgetown University Hospital



Sponsored by  
THE DIVISION OF CARDIOLOGY  
DEPARTMENT OF MEDICINE  
GEORGETOWN UNIVERSITY  
SCHOOL OF MEDICINE

and

THE COUNCIL ON CLINICAL CARDIOLOGY  
AMERICAN HEART ASSOCIATION



DONALD S. FREDRICKSON, M.D.

Chief, Molecular Disease Branch  
National Heart Institute  
National Institutes of Health

EDITORS: James A. Ronan, Jr., M.D.\*  
Assistant Professor of Medicine  
Georgetown University School of Medicine  
Teaching Scholar of the American Heart Assn.

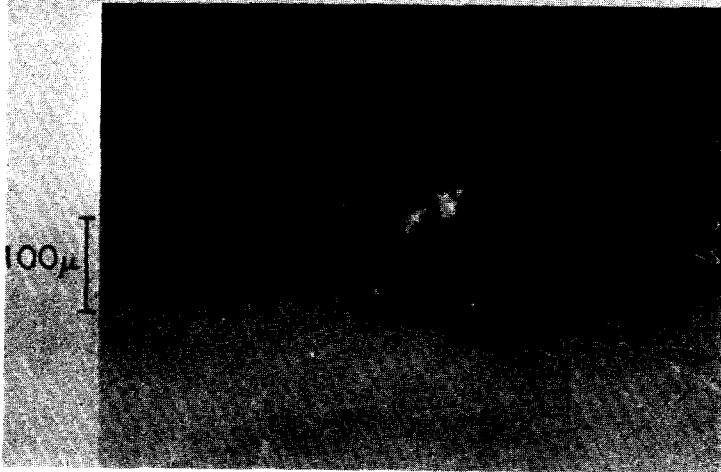
W. Proctor Harvey, M.D.  
Professor of Medicine  
Georgetown University School of Medicine  
Director, Division of Cardiology  
Georgetown University Medical Center

Technical Assistance—Ruth Weinmann Georgetown University Hospital

This is the first of a series of cardiovascular conferences sponsored by the Georgetown University Hospital and Council of Clinical Cardiology, American Heart Association.

\*Teaching project developed during Dr. Ronan's appointment as Teaching Scholar of the American Heart Association.

PERIPH. CORONARY BR.



---

## PREMATURE ATHEROMAS

### RISK FACTORS

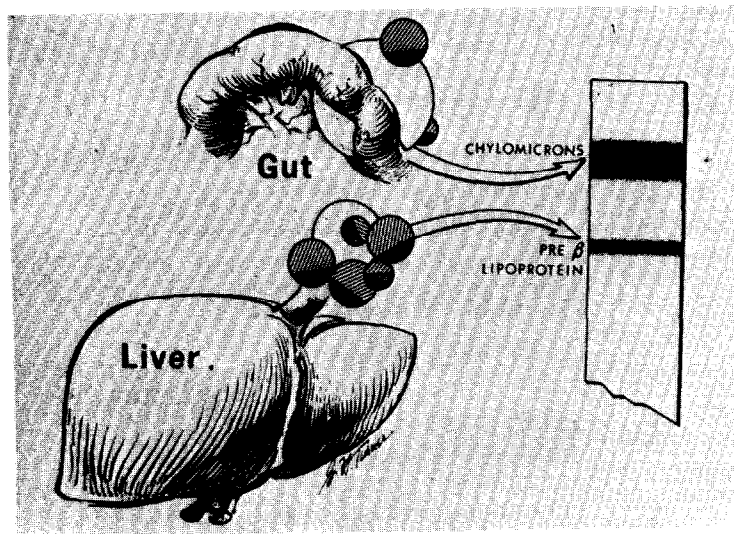
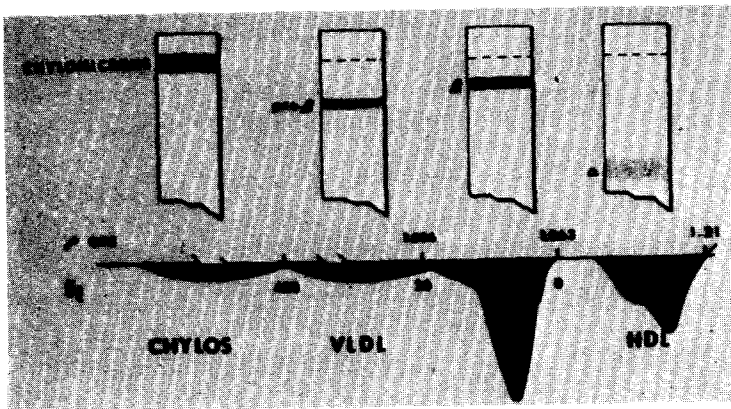
1. HYPERLIPIDEMIA
2. CIGARETTE SMOKING
3. HYPERTENSION
4. DIABETES

---

O P R O T E I N  
H Y P E R L I P ~~I D~~ E M I A  
^

## DECISIONS ABOUT HYPERLIPOPROTEINEMIA

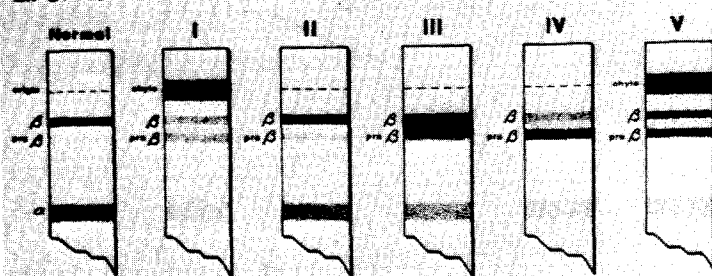
1. What is the Type?
2. Primary vs. Secondary
3. Is it Familial?
4. Treatment



## DECISIONS ABOUT HYPERLIPOPROTEINEMIA

1. What is the Type?
  - a. Always do C, TG
  - b. Always look at serum
  - c. Sometimes do lipoproteins

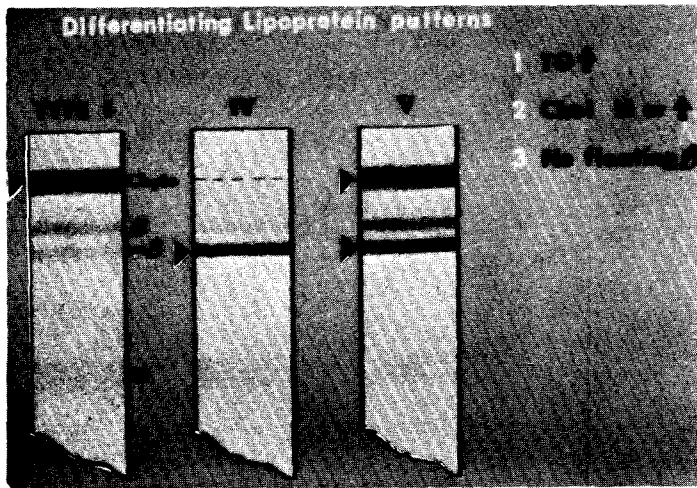
### LIPOPROTEIN PATTERNS IN FAMILIAL HYPERLIPOPROTEINEMIA



### DETECTION OF ALL HYPERLIPOPROTEINEMIA BY LIPIDS ALONE\*

Cholesterol	60%
Triglyceride	70%
Cholesterol and Triglyceride	96%

\*Using Age Corrected Limits



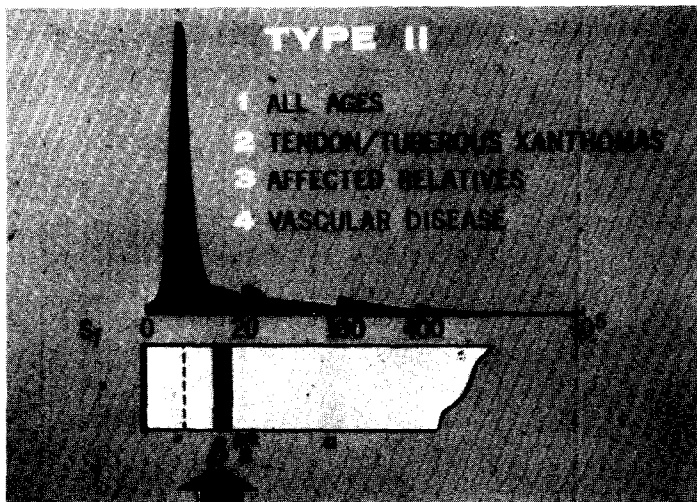
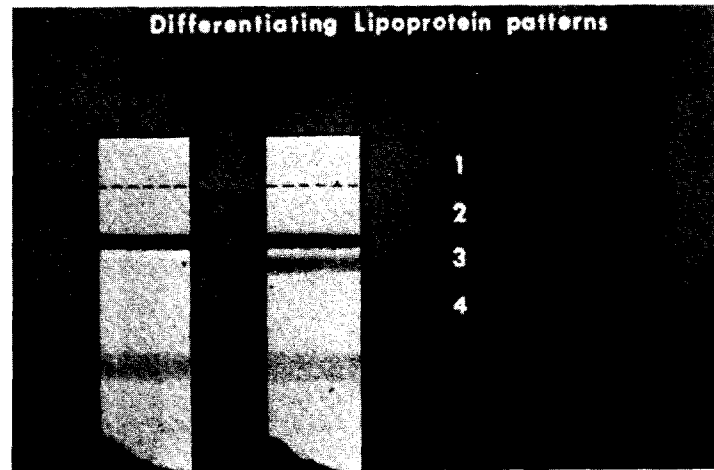
## TYPE II

\*4. BETA-LP INCREASED

5. pre-beta normal or increased

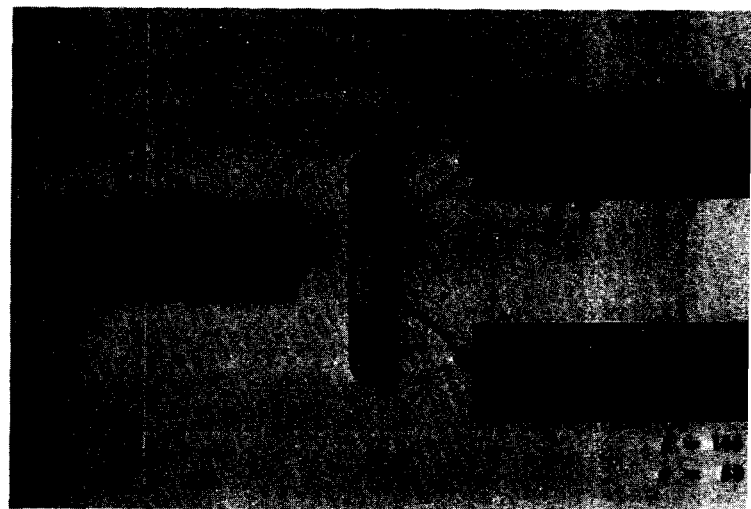
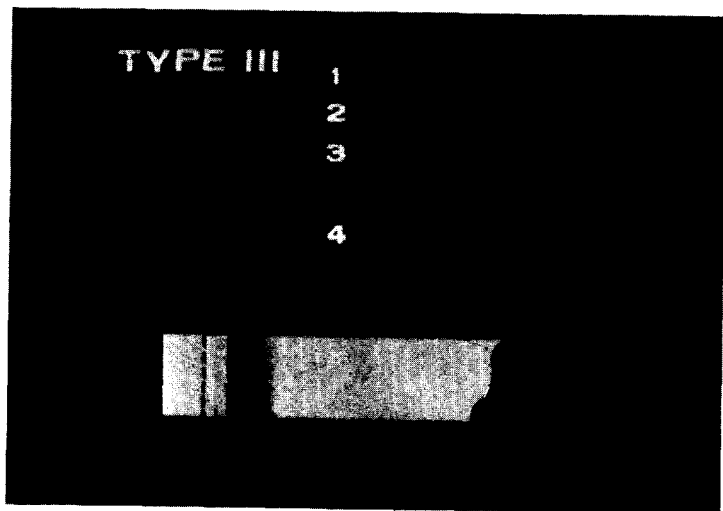
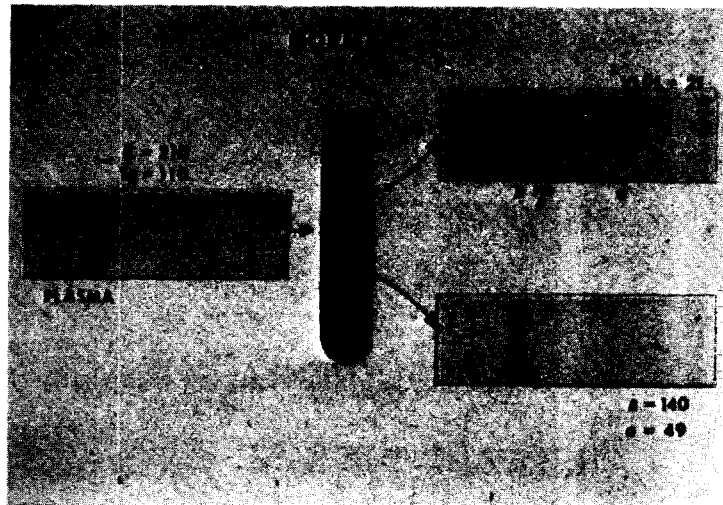
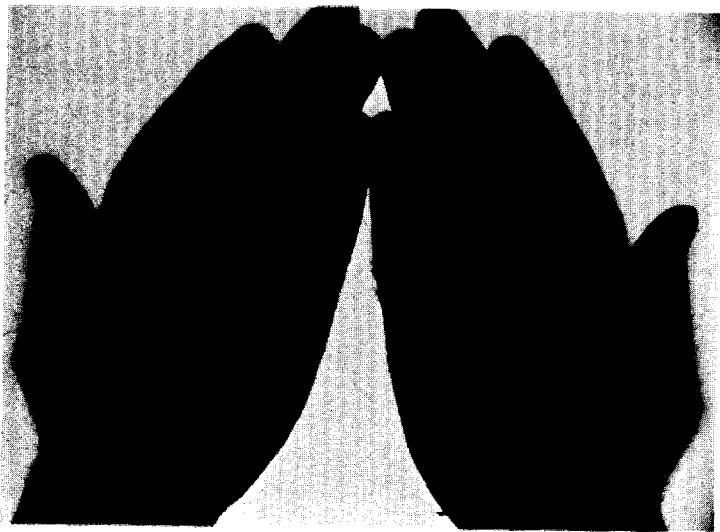
## TYPE II

1. C increased
2. TG Normal or Increased (<500)
3. Plasma clear



## TYPE III

1. C, TG increased
2. C/TG ~ 1
3. Plasma turbid, with faint cream layer



### TYPE III

4. Broad beta band  
pre-beta increased  $\pm$

\* 5. BETA FLOATING AT  
D 1.006

### DECISIONS ABOUT HYPERLIPOPROTEINEMIA

2. Primary vs. Secondary

## TYPE II PHENOCOPIES

DIETARY EXCESS

HYPOTHYROIDISM

NEPHROSIS

DYSGLOBULINEMIA

HEPATIC DISEASE

---

## DECISIONS ABOUT HYPERLIPOPROTEINEMIA

3. Is it Familial?

---

### Familial Type II

Relatives of 134 Propositi:

	<u>N</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Parents	44	46	0	4
Sibs	89	93	0	6
Children	<u>140</u> <u>273</u>	<u>140</u> <u>279</u>	0	<u>5</u> <u>15</u>

## TYPE III PHENOCOPIES

UNCONTROLLED DIABETES

HYPOTHYROIDISM ?

---

## TYPE IV PHENOCOPIES

DIABETES

HYPOTHYROIDISM

DYSGLOBULINEMIAS

CALORIC EXCESS

ALCOHOL EXCESS

### Familial Type IV

Parents and Sibs of 42 Propositi:

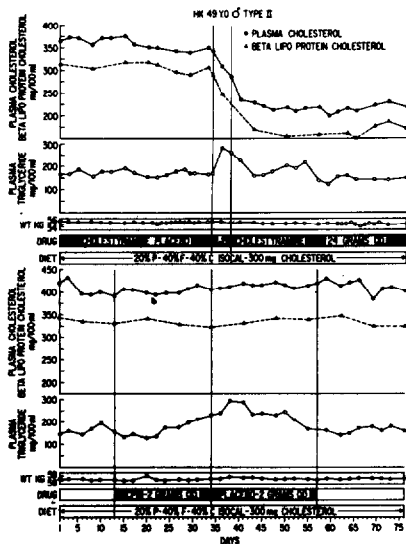
<u>N</u>	<u>IV</u>	<u>V</u>
70	65	0

1. What is the Type?
  - a. Always do C, TG
  - b. Always look at serum
  - c. Sometimes do lipoproteins
2. Primary vs. Secondary
3. Is it Familial?
4. Treatment
  - a. Diet
    - 1) calories
    - 2) content
  - b. Drugs

## TYPE II

### TREATMENT

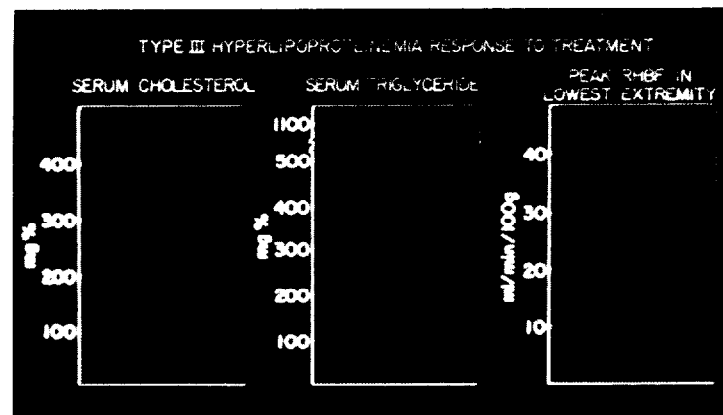
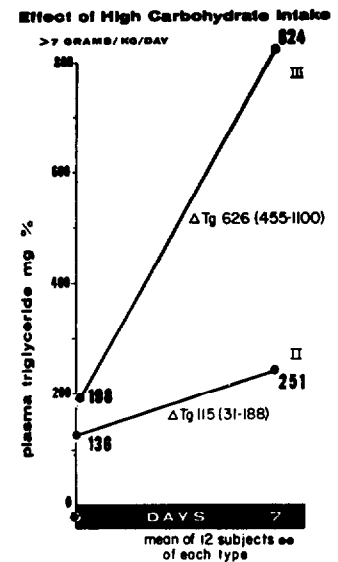
1. DIET - Hi P/S  
Low Chol
2. DRUG - Cholestyramine  
Nicotinic Acid  
d - Thyroxine  
Chlofibrate



## TYPE III

### TREATMENT

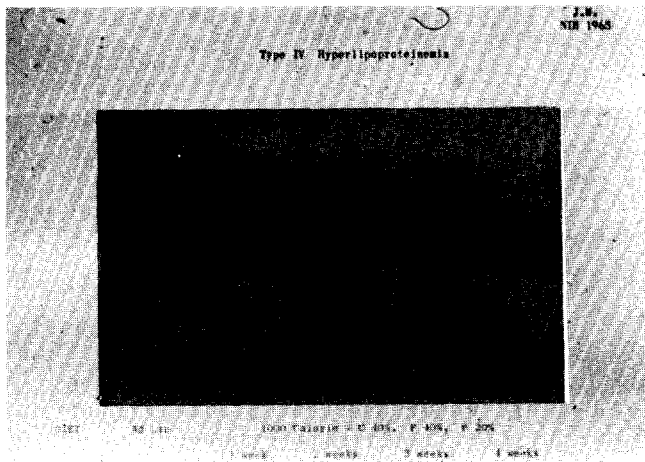
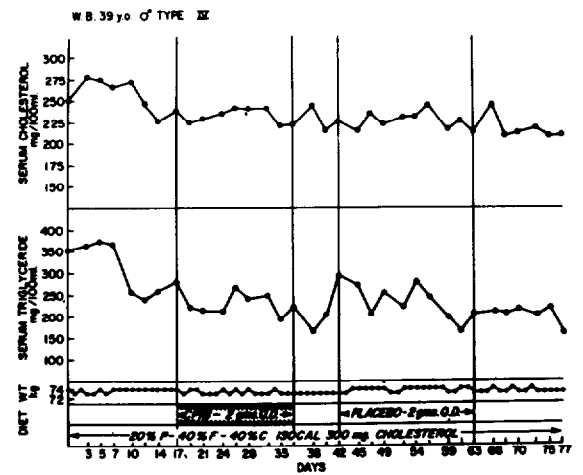
1. DIET - Ideal Wgt  
Hi P/S  
Low Chol  
Limit CHO
2. DRUG - Chlofibrate  
Nicotinic Acid



## TYPE IV

### TREATMENT

1. DIET - Ideal Wgt  
Limit CHO  
Limit Alcohol
2. DRUG - Chlofibrate  
Nicotinic Acid



## DECISIONS ABOUT HYPERLIPOPROTEINEMIA

1. What is the Type?
2. Primary vs. Secondary
3. Is it Familial?
4. Treatment

